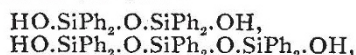


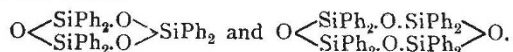
is contributed to *Knowledge* for December by Mr. H. F. Slack. Written in a popular style, it still contains a large array of accurate technical information, which will provide profitable reading for the trained chemist as well as for the lay reader.

UNDER the unassuming title of "Studies of Chinese Wood Oil, β -Elaeostearic Acid," Dr. R. S. Morrell describes in the *Chemical Society's Journal* a series of experiments which represent the starting-point of a new era in the study of "drying oils." This particular oil, when exposed to light, deposits a crystalline glyceride ($C_{18}H_{31}O_2$)₃C₃H₅, which absorbs oxygen with extreme facility, and possesses all the essential properties of a drying oil. But on account of its high melting-point, 61-62° C., it can be separated in a state of chemical purity, and provides for the first time a homogeneous material for the accurate scientific study of the "drying" process. The free acid of the glyceride and five of its salts are described in the paper. It is a remarkable fact that the ethyl ester, unlike the glyceride, does not possess the property of setting.

EXCEPTIONAL interest attaches to Prof. Kipping's papers on organic derivatives of silicon, issued in the November number of the *Chemical Society's Journal*. The most recent papers deal with silicane-diols of the type $SiX_2(OH)_2$. These compounds possess in a remarkable degree the property of forming anhydrides. Thus diphenylsilicane diol, $SiPh_2(OH)_2$, gives compounds such as the diols—



and the oxides—



These are formed by the removal of water from two, three, three and four molecules of the original diol. Such compounds are undoubtedly typical of a tendency amongst silicon compounds to form chains and rings of alternate silicon and oxygen atoms, which are nearly as stable as the "all-carbon" chains of organic chemistry. This tendency serves to explain the prolific character of oxidised silicon, which gives rise to derivatives only less complex than the carbon-compounds of organic chemistry.

ON December 18 Mr. W. J. A. Butterfield delivered a lecture on coal gas before the Institute of Chemistry, at University College, London. The requirements of a public gas supply were first discussed, the principal points being minimum cost per heat unit, strong smell to facilitate detection of leaks, a luminous flame, and innocuous combustion products. The growth and magnitude of the gas industry here and abroad were then dealt with, the world's production of town gas in 1912 being estimated at 620,000 million cubic feet, for the production of which about 60 million tons of coal would be consumed. As by-products, 30 million tons of coke, 3 million tons of tar, together with ammoniacal products equivalent to about 550,000 tons of sulphate of ammonia, would be sold.

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As regards the annual consumption of gas per head of population, London heads the list with more than 800 cubic feet. The predominant use of gas at the present day was stated to be for heating purposes. From this point of view present-day requirements of a gas supply in this country were characterised by (1) a gross calorific power of 540 to 580 B.T.U. per cubic foot; (2) specific gravity between 0.4 and 0.5; (3) oxygen required for complete combustion to be between 1.0 and 1.1 volumes of the coal gas, but the fluctuations in each of these to be restricted within narrow limits for any one district.

MESSRS. WILLIAMS AND NORGATE have just published the first number (January) of *The British Review*, with which is incorporated *The Oxford and Cambridge Review*. The aim is stated to be "to provide a periodical that shall be in the forefront of the world's movements, showing what there is to observe in mental and moral advancement." Among the articles in the January issue are:—"My Views regarding True and False Science," by Count Leo Tolstoy; "Bristol University and Some Reforms," by Mr. F. M. Atkinson; and "Huxley and the Catholic Faith," by Mr. Cecil Chesterton.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES FOR JANUARY:—

- Jan. 5. 2h. 37m. Mercury in conjunction with the Moon (Mercury 5° 41' N.).
 ,, 7h. 36m. Mars in conjunction with the Moon (Mars 4° 25' N.).
 ,, 15h. 34m. Jupiter in conjunction with the Moon (Jupiter 5° 11' N.).
 8. 4h. 27m. Uranus in conjunction with the Moon (Uranus 4° 4' N.).
 9. 7h. 32m. Mercury in conjunction with Mars (Mercury 0° 47' N.).
 10. 22h. 29m. Venus in conjunction with the Moon (Venus 1° 28' N.).
 11. 3h. 4m. Mercury in conjunction with Jupiter (Mercury 0° 13' S.).
 13. 9h. 35m. Mars in conjunction with Jupiter (Mars 0° 47' S.).
 14. 20h. 0m. Neptune at opposition to the Sun.
 17. 18h. 46m. Saturn in conjunction with the Moon (Saturn 6° 14' S.).
 21. 14h. 7m. Neptune in conjunction with the Moon (Neptune 5° 24' S.).
 23. 14h. 0m. Uranus in conjunction with the Sun.
 28. 20h. 0m. Saturn stationary.
 31. 19h. 30m. Mercury in conjunction with Uranus (Mercury 1° 23' S.).

A BRIGHT METEOR REPORTED.—Two correspondents of *The Daily Dispatch* (December 21) report the appearance of what was probably a meteor of exceptional brilliancy at 10.50 p.m. on December 18. One describes it as a long, brilliant, bluish light, "about thirty yards long," and tapering to the "tail," around which was a peculiar pale golden glow. Stationed at Handforth, a village about nine miles due south of Manchester, this observer saw the meteor in the southern sky and states that it appeared to fall slightly during its flight, which lasted eight seconds. The second observer states that the sky was so poor that no stars were visible from where he was, although the moon shone through the mist, yet the meteor was

so bright as to remind him of a great rocket. He describes it as a great white light, with a brilliant head and a long, spreading, and shimmering tail, which cut its way across the whole expanse of the sky. From his position in Manchester the meteor appeared to travel in a direction slightly north of west from a point not far from south. Further details of this phenomenon should prove of interest.

EPHEMERIS FOR GALE'S COMET, 1912a.—In No. 4618 of the *Astronomische Nachrichten*, Dr. Ebell publishes a daily ephemeris, extending to February 5, 1913, for Gale's comet. The comet is now high up in Draco, and is reported to have a nucleus of magnitude 10 or 11. The following is an extract from Dr. Ebell's ephemeris, which is based on the elements published in Lick Observatory Bulletin No. 218:—

Ephemeris 12 h. (M.T. Berlin).

| 1912-13 | α (true) h. m. | δ (true) ° | $\log r$ | $\log \Delta$ | Mag. |
|-------------|--------------------------|----------------------|------------|---------------|------|
| Dec. 27 ... | 17 17.6 ... | +64 54.5 ... | 0.2245 ... | 0.1374 ... | 8.6 |
| 31 ... | 17 30.0 ... | +68 14.8 ... | 0.2389 ... | 0.1426 ... | 8.6 |
| Jan. 4 ... | 17 45.5 ... | +71 34.9 ... | 0.2529 ... | 0.1490 ... | 8.8 |
| 8 ... | 18 5.9 ... | +74 51.8 ... | 0.2663 ... | 0.1568 ... | 8.9 |
| 12 ... | 18 35.1 ... | +78 1.0 ... | 0.2792 ... | 0.1661 ... | 9.0 |
| 16 ... | 19 20.1 ... | +80 53.9 ... | 0.2917 ... | 0.1766 ... | 9.1 |

THE SPECTRUM OF NOVA GEMINORUM, No. 2.—Having secured a number of photographs of the spectrum of Nova Geminorum, No. 2, Messrs. Adams and Kohlschutter give their measures and discussion of the radiations in No. 4, vol. xxxvi., of *The Astrophysical Journal*. The plates were taken with the Cassegrain spectrograph attached to the large reflector (80-foot focus) at Mount Wilson, and cover the period March 22–May 27. During this period considerable changes took place in the spectrum of the nova, and these are discussed at some length in the paper: the chief nebula line, λ 5007, was first certainly seen on April 6.

The authors have measured some hundreds of apparently dark and bright lines in the spectrum, and give observed wave-lengths for four groups of negatives, each group covering a definite period; thus in addition to the wave-lengths for the centres of the bright bands they give wave-lengths for the dark lines which some observers consider to be only parts of the structure phenomena of the bright bands. Generally speaking, the wave-lengths for the centres of the latter agree fairly well with those determined from the Madrid spectra, and published in *NATURE* on April 25 (No. 2217, vol. 89, p. 201), and, possibly, might bear the same interpretation. Ten wave-length values of bright bands are given as reasonably identified with helium lines, although it is somewhat difficult to see, from the list of observed wave-lengths, exactly the type of line, or band, some of them represent. The presence of radioactive substances in the nova's atmosphere is not indicated by the Mount Wilson photographs, and the authors consider that the presence of nitrogen, as suggested by Mr. Wright in the case of Nova Lacertæ, is probable but scarcely proven.

The widths and displacements of the bright and dark hydrogen lines are also discussed, and the paper is accompanied by reproductions of a number of excellent spectrograms.

OBSERVATIONS OF SATURN.—*L'Astronomie* for December contains the results of some observations of Saturn made by M. J. Camus, with the Mailhat equatorial of 0.19 m. aperture, at the French Astronomical Society's observatory, on November 7. M. Camus used a power of 230, and he reports that, in front of the planet, the exterior edge of the crape ring showed

marked irregularities appearing in profile as grey patches on the yellowish background of the globe. He was also able to recognise the various tints of the same ring.

IMPROVEMENTS IN MICROSCOPES.

SOME time ago (*NATURE*, December 14, 1911) we referred to several improvements which Messrs. Beck had introduced into their microscopes, and we noted especially the "handle" model as one in which all risk of damage is avoided to the working parts and adjustments when the instrument is moved. Messrs. Beck now inform us that they have revised the make of their well-known "London microscope" on the handle model. In addition to this, the base and pillar are so designed that although the Continental model has been retained, the position of the centre of the inclining joint has been so placed as to give greater stability when the instrument is in a horizontal position, whilst not interfering with its vertical rigidity, and the size of the base has been increased to that of their large models to insure perfect steadiness under all conditions. The stage is square and specially large, measuring 4 in. in each direction. The coarse adjustment is by a spiral rack and pinion, so accurately fitted that even comparatively high powers can be focussed thereby. The fine adjustment is of the lever type. The adjustment is obtained by a fine micrometer screw actuating a supplementary pointed rod which impinges upon a hardened steel block working upon the lever. The body tube is 140 mm. long, with a graduated draw tube, in a carefully packed fitting, which extends to a length of 200 mm.

We have received a catalogue of microscopes from Messrs. W. Watson and Sons, 313 High Holborn, W.C., in which the well-known instruments manufactured by this firm are fully described. Their microscopes are British, both in design and construction, with the result that such points as a tripod foot to ensure rigidity in any position, and sprung fittings with adjusting screws to compensate for wear and tear, are insisted on. On the optical side, perhaps no firm has devoted more attention than Messrs. Watson to the substage condenser. In this connection it is noteworthy that they are now supplying an aplanatised Abbe illuminator, which has an aplanatic cone of 0.65 N.A., that is, 0.15 N.A. in excess of the ordinary type, its total N.A. being 1.20. At the price of 17s. 6d. such an appliance is obtainable by all microscopists, and will substantially increase the utility of any optical combination. It is interesting to see that such an improvement in substage illuminators is called for; at least it is reasonable to infer that such a demand has arisen. If it indicates that the average microscopist is at last awaking to the fact that in this direction he has the power greatly to increase the possibilities of his instrument, even if it is of a simple form, then there is much hope in the future for microscopy.

There is another matter of interest referred to in the catalogue. Messrs. Watson are now providing, under the designation *1/12 in., an objective which is really a 1/14 in. They state that many of the 1/12 in. lenses produced by other makers have really the magnification of a 1/14 in., so they determined to supply objectives of similar power. Tested with a Reichert 1/12 and a Leitz 1/16, the magnification of the new lens is half-way between the two. Its N.A. 1.30 and its wonderful definition enable it to resolve difficult test objects. The dots of *Surirella gemma*, for instance, are easily seen with oblique illumination, and the definition is good enough to